



## NASA seeks ideas for future Space Transportation plan

by Martin Burkey

NASA is beginning a new journey toward the launchpad with a second-generation reusable launch vehicle (RLV) system that will be safer and cheaper than today's technology, and will rely more heavily on the commercial space business to meet NASA's science and exploration goals.

The agency Tuesday published a NASA Research Announcement entitled "Second Generation RLV Risk Reduction Definition Program." It calls for industry

proposals as a first step in defining detailed requirements, and identifying and commencing initial risk reduction options, to enable a second-generation Reusable Launch Vehicle competition in 2005, leading to an operational system around 2010.

The studies will serve as a springboard for the five-year, \$4.5 billion effort to reduce the risk associated with building and operating next-generation launch systems before entering the full-scale development phase in 2005.

"In the last several years, NASA has initiated several technology demonstration programs," said Dr. Row Rogacki, director of Marshall's Space Transportation Directorate. Marshall is NASA's Lead Center for Space Transportation. "We've invested in specific concepts. We've partnered heavily with industry on aggressive technology programs. We've made great progress and gained much insight into promising emerging technologies. We

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## Marshall's Sackheim elected to National Academy of Engineering

Robert L. Sackheim, Marshall's assistant director for space propulsion systems, has been elected to membership in the National Academy of Engineering for 2000.

Elected for contributions to space and missile propulsion technology and programs, Sackheim becomes the third individual from Marshall to be elected to the academy. Dr. Wernher von Braun was elected in 1967 and Dr. William Lucas was elected in 1978.

Sackheim is one of 78 engineers and eight foreign associates elected to membership for 2000. This brings the total U.S. membership to 2,027 and the number of foreign associates to 157.

Election is among the highest professional distinctions accorded an engineer. Academy membership honors those who have made "important contributions to engineering theory and practice, including significant contributions to the literature of engineering theory and practice," and those who have demonstrated "unusual accomplishment in the pioneering of new and developing fields of technology."



Robert Sackheim

## NASA Center directors, senior reps visit Marshall

Directors of five NASA Centers, and senior representatives from two other Centers, visited Marshall last Thursday for meetings on the agency's space transportation technology programs.

Center directors visiting Marshall were **Henry McDonald** from Ames Research Center; **Kevin Peterson** from Dryden Flight Research Center; **Jeremiah Creedon** from Langley Research Center; **Donald Campbell** from Glenn Research Center; and **Roy Estess** from Stennis Space Center. Other NASA representatives visiting were **Elric McHenry**, manager of advanced development in the Engineering Directorate at Johnson Space Center; and **Loren Shriver**, deputy director for launch and payload processing, from Kennedy Space Center.

"This is the most Center directors to visit Marshall at one time since I've been here," said Marshall Center Director Art Stephenson. "Their visit is important because we must have teamwork to successfully accomplish the aggressive goals we have for space transportation. Marshall Center cannot do it alone."

The morning session included overviews of Marshall-led programs including the Advanced Space Transportation Program, X-33, X-34, X-37 and the new 2<sup>nd</sup> Generation Reusable Launch Vehicle Program, in preparation for the FY2002 budget cycle.

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**"Safety is a Key Element of Design"**

— Safety slogan submitted by  
**Bill Walz, QS20**

# President issues Women's History Month proclamation

Last spring, three women astronauts paused during a shuttle mission to pay homage to the past. Thousands of miles into space, floating above the floor of the shuttle, they raised a women's suffrage banner and posed for a picture.

Astronaut Ellen Ochoa, a participant in this special tribute and a member of the President's Commission on the Celebration of Women in American History, said, "We wanted to show how far women have come in this century and to honor the people who fought for our rights."

Each year during the month of March, citizens across our country pause to honor the many heroes whose diligence and determination have helped to forge our Nation and enable people like Ellen Ochoa and her colleagues to soar so high.

Women's History Month is about highlighting the extraordinary achievements of women throughout our history, while recognizing the equally significant obstacles they had to overcome along the road to success. It is about the women who bravely donned uniforms and fought for our country. It is about the passion and vision of women educators like Mary McLeod Bethune, who, with only \$1.50 in her pocket, founded a school for young black women. It is about the perseverance and pioneering spirit of women like Margaret Chung, the first Chinese-American woman physician, who supported herself through medical school by washing dishes and

lecturing on China. It is about Alice Paul's fight for the vote and Elizabeth Wanamaker Peratrovich's campaign to end discrimination against Alaska Natives. It is about the writings of Zora Neale Hurston, the paintings of Georgia O'Keeffe, the leadership of labor organizer Dolores Huerta, and the trailblazing artistry of photographer Margaret Bourke-White. It is also about the millions of unsung women whose contributions have made life better for their families and their communities.

Inspired by the courageous pioneers who came before them, women today continue to shape our Nation's destiny. Last year, Air Force Lt. Col. Eileen Collins became the first woman commander of a Space Shuttle mission. American violinists Sarah Chang, Pamela Frank and Nadja Salerno-Sonnenberg were the first women to take home the prestigious Avery Fisher Prize in its 25-year history. And, in a game attended by the largest crowd of all time for a women's sporting event, the U.S. women's soccer team captured the World Cup.

Today, 58 women hold seats in the U.S. House of Representatives, and nine women are U.S. senators. More women hold high-level positions in my Administration than in any other in history. And in the private sector, women own nearly 9 million small businesses, employing millions of Americans and contributing significantly to the strength of our economy.

As we honor the past and celebrate the

present, we must also focus on the future. Our choices today will have an enormous impact on the destiny of our daughters and granddaughters, our sons and grandsons. We must rededicate ourselves to forging a society in which gender no longer predetermines a person's opportunities or station in life. We must shatter the glass ceiling; eradicate wage discrimination; and ensure that every American has the tools to meet both family and work responsibilities and to retire in security. By breaking down the remaining barriers and opening wide the doors of opportunity, we can make the future brighter for women and for all Americans.

NOW, THEREFORE, I, WILLIAM J. CLINTON, President of the United States of America, by virtue of the authority vested in me by the Constitution and laws of the United States, do hereby proclaim March 2000 as Women's History Month. I encourage all Americans to observe this month with appropriate programs, ceremonies, and activities, and to remember throughout the year the many contributions of courageous women who have made our Nation strong.

IN WITNESS WHEREOF, I have hereunto set my hand this twenty-ninth day of February, in the year of our Lord two thousand, and of the Independence of the United States of America the two hundred and twenty-fourth.

—William J. Clinton



Courtesy photo

## Good citizen

Dr. Jan Davis, deputy director of the Flight Projects Directorate, recently received the Sons of the American Revolution Good Citizenship Medal for her achievements as a NASA/Marshall engineer and as an astronaut. Dr. Howard F. Horne Jr., left, president general of the Sons of the American Revolution, and Hoyt Smith, right, president of the Alabama Society of the Sons of the American Revolution, presented the award on Feb. 26 at the Alabama State Convention of the Sons of the American Revolution held in Huntsville. This medal is a national award presented to persons who have made outstanding contributions to the nation in their field of expertise and are an example of notable service on behalf of our American principles.

# Cosmic pressure fronts mapped by Chandra

A colossal cosmic “weather system” produced by the collision of two giant clusters of galaxies has been imaged by the Marshall-managed Chandra X-ray Observatory.

For the first time, the pressure fronts in the system can be traced in detail, and they show a bright but relatively cool 50 million degree central region embedded in a large elongated cloud of 70 million degree gas, all of which is roiling in a faint “atmosphere” of 100 million degree gas.

“We can compare this to an intergalactic cold front,” said Maxim Markevitch of the Harvard-Smithsonian Center for Astrophysics, Cambridge, Mass., and leader of the international team involved in the analysis of the observations. “A major difference is that in this case, cold means 70 million degrees.”

The gas clouds are in the core of a galaxy cluster known as Abell 2142. The cluster is six million light years across and contains hundreds of galaxies and enough gas to make a thousand more. It is one of the most massive objects in the universe.

Galaxy clusters grow to vast sizes as smaller clusters are pulled inward under the influence of gravity. They collide and merge over the course of billions of years, releasing tremendous amounts of energy that heats the cluster gas to 100 million degrees.

The Chandra data provide the first detailed look at the late stages of this merger process. Previously, scientists had used the German-U.S. Roentgen satellite to produce a broad-brush picture of the cluster. The elongated shape of the bright cloud suggested that two clouds were in the process of coalescing into one, but the details remained unclear. Chandra is able to measure variations of temperature, density and pressure with unprecedented resolution.

“Now we can begin to understand the physics of these mergers, which are among the most energetic events in the universe,” said Markevitch. “The pressure and density maps of the cluster show a sharp boundary that can only exist in the moving environment of a merger.”

With this information scientists can make a comparison with computer simulations of cosmic mergers. This comparison shows that this merger has progressed to an advanced stage. Strong shock waves predicted by the theory for the initial collision of clusters are not observed. It appears likely that these sub-clusters have collided two or three times in a billion years or more, and have nearly completed their merger.

The observations were made on Aug. 20, 1999, using the Advanced CCD Imaging Spectrometer. The team included scientists from Harvard-Smithsonian; the Massachusetts Institute of Technology in Cambridge, Mass.; the Marshall Center; the University of Hawaii in Honolulu; the University of Birmingham in the United Kingdom; the University of Wollongong in Australia; the Space Research Organization in the Netherlands; the University of Rome in Italy; and the Russian Academy of Sciences. The results will be published in an upcoming issue of the *Astrophysical Journal*.

## ‘NASA Goes to the Stars’ April 6

The entire Marshall family will have a chance to enjoy a night of fun and excitement during NASA Exchange buyout night April 6 for the Huntsville Stars baseball game against the Chattanooga Lookouts.

At 7:05 p.m., Marshall Center Director Art Stephenson will throw out the first pitch. Pregame activities will feature news of the Great Moonbuggy Race April 7-8 at the U.S. Space & Rocket Center and Marshall’s Open House on May 20.

Free tickets to the baseball game will be available from administrative officers and the NASA Exchange the week of March 20. There will be a safety slogan contest with winners receiving reserved seating for the game. Details on the contest will be announced.

T-shirt orders will be taken online. T-shirts are white heavyweight cotton, with the NASA meatball and “Marshall Space Flight Center” on the front, and “NASA Goes to the Stars” on the back. Prices for a short-sleeve shirt are \$10 for adults and \$9.50 for children. Long-sleeve shirts are \$15 for adults and \$14 for children.

## Directors

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The Center directors also attended the Lead Center Program Management Council review in the afternoon. “We had an outstanding review,” said Garry Lyles, the Advanced Space Transportation Program program manager. “The review demonstrated the progress we’ve made — both in terms of the technologies we’re delivering and the partnerships we’ve forged with other Centers to accomplish the program.”



Photo by Terry Leibold, NASA/Marshall Space Flight Center

Marshall Center Director Art Stephenson, left, visits with Glenn Research Center Director Donald Campbell.



# Experiment could lead to spacecraft design breakthrough

by Deana Nunley

An experiment that could lead to a breakthrough in the design of space vehicles successfully completed its final design review in February and is planned for flight demonstration in June.

The flight experiment will test ultra-high temperature ceramic material that could radically improve thermal protection of spacecraft through the extreme heat of reentry into Earth's atmosphere.

The Slender Hypervelocity Aerothermodynamic Research Probe – or SHARP B2 — is one of the Future-X flight experiments selected by NASA to help mold the future of space transportation. The Marshall Center manages the

Future-X Program. The SHARP B2 experiment is led by Ames Research Center at Moffett Field, Calif.

Ultra-high temperature ceramic material could make it possible for space vehicles to have sharp leading edges, instead of the blunt body design common to today's spacecraft.

Engineers routinely design spacecraft with blunt leading edges that create a region of compressed air in front of the vehicle as it travels faster than the speed of sound. This region absorbs much of the heat associated with a spacecraft's reentry into Earth's atmosphere and keeps the vehicle's edges from overheating.

Blunt body vehicles, however, are inefficient and have high drag, or friction, as

they fly — resulting in large, expensive propulsion systems. The ceramic material the Ames Center will test in flight could substantially lower the cost of boosting objects to space.

A modified Mk12A reentry vehicle — basically an aerodynamic nose cone — with four sharp leading edges will be launched into space aboard a U.S. Air Force Minuteman III launch vehicle June 28 and will make a high-speed reentry into the atmosphere to test the ceramic material.

Following reentry, the vehicle will deploy a drag chute and be recovered from the Pacific Ocean.

*The writer, employed by ASRI, supports the Media Relations Department.*

## Gaining perspective

Students from University of Montevallo's drama department visit Marshall's Engineering Directorate to gain perspective into the Challenger tragedy for an upcoming production.



Kathleen McGeever, right, professor of the theater at University of Montevallo, with students in a Shuttle simulator at the U.S. Space & Rocket Center.



Photos by Doug Stoffer, NASA/Marshall Space Flight Center

Marshall retiree Jim Hester, right, explains what happened to Space Shuttle Challenger on Jan. 28, 1986.

## Engineering Directorate announces logo contest

Employees and support contractors in Marshall's Engineering Directorate are encouraged to enter a contest to develop a logo for the directorate.

"We want everyone on our team to be a part of developing an identifying graphic for the new directorate," said Jim Kennedy, director of the Engineering Directorate. "This logo will serve as a symbolic representation of who we are and what we're about as a key service provider to our many program and project customers." The Engineering Directorate's Outreach Team is sponsoring the logo contest.

"Key factors to consider in the development of a logo concept include our Marshall core values, the cross-cutting nature of our directorate's mission, and our vision of world-class engineering enabling our customers' mission success," Kennedy said.

Participants are encouraged to submit their entries electronically either in GIF, JPG or TIFF format at the following Web site: <http://ntf-1.msfc.nasa.gov/edlogo.nsf/>

If employees cannot submit their entries electronically, outreach representatives will accept hard copies. Names of representatives and information regarding the contest are available on the Web.

"It's important to note that the entries do not need to be of professional quality," Kennedy said. "After the winning concept is selected, we will ask a professional graphic artist to enhance the logo."

Engineering directorate employees and contractors will "vote" online for the best entry. Prizes will be awarded to all contributors for the top five entries, with prizes for all contributors to the winning logo concept. Entries are due March 24.

## Property Awareness Month

# Employees, contractors must complete training

**For access to the Web-based mandatory property responsibility training, further information and additional links, click on the**



## Key Personnel Announcement

Daniel L. Dumbacher has been appointed manager of the Second Generation Reusable Launch Vehicle Program Office in Marshall's Space Transportation Directorate. He currently serves as manager of the Structures, Materials and Thermal Department in the Engineering Directorate.

Dumbacher began his federal career in 1979 as a summer engineering aid assigned to the Engineering Analysis Division, Structures and Propulsion Laboratory at Marshall. In 1981, he received a career appointment as an aerospace engineer in Marshall's Structures and Propulsion Laboratory.



Daniel Dumbacher

He left Marshall for a brief time in 1985 to work as a field office representative for project management at Teledyne-Brown Engineering. In 1987, he returned to Marshall as chief engineer in Alternate Turbopump Development, Space Shuttle Main Engine Chief Engineers.

## Transportation

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better understand the balance between commercial and government interests.

"However, NASA has encountered difficult lessons and delays in key technology projects," Rogacki said. "We've learned that more development along multiple competing paths is needed. We've learned that commercial markets are not growing as previously projected.

"But there are still possibilities to make access to space more robust," he said. "This effort is part of the Administration's Space Launch Initiative intended to target these challenges."

NASA's strategy has three main goals:

- A hundredfold increase in safety over existing systems and a tenfold reduction in the cost to launch payloads, from \$10,000 per pound today to \$1,000 per pound in a decade;
- Minimize technical and business risk

for the full-scale development program, ensure NASA's requirements are met and coordinate with requirements of the commercial space industry, support private ownership and operation of reusable launch vehicles and other potential systems;

- Enable more than one commercial option for getting to the International Space Station, and affordably meeting NASA's

near-term space transportation requirements while providing growth paths to meet future requirements.

The studies will address an architecture that covers not only possible Earth-to-orbit launch vehicles, but also in-space orbit transfer vehicles, ground and flight operations and the technology and organization required to support both.

NASA and its industry partners will take advantage of space transportation programs such as the X-33, X-34, X-37 and Advanced Space Transportation Program to reduce technical risk and

create increased competition during the five-year risk reduction phase.

The risk reduction program will be a NASA-wide effort and also will involve the U.S. Department of Defense.

A briefing for potential bidders will be held Friday at 9 a.m. CST at the Marshall Center in Building 4200, in Morris Auditorium. Industry proposals in various technical areas are due by June 1. NASA anticipates multiple awards this year resulting from the NASA Research Announcement.

The risk reduction program is a result of NASA's industry-led Space Transportation Architecture Studies in 1998 and 1999, and the agency's Integrated Space Transportation Plan developed in the fall of 1999. In addition to a second-generation reusable launch vehicle, that plan addressed safety upgrades for the Space Shuttle, a crew return vehicle for the Space Station and basic technology research. Those elements are covered in other program plans.

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Dr. Row Rogacki



## Job hazard analysis is one element of becoming Star site

*(Editor's note: This is the first in a series of articles that will address frequently asked questions on the 19 elements in the Voluntary Protection Program (VPP).)*

### **Q: Many employees are asking, "What exactly is a Job Hazard Analysis?"**

**A:** A job hazard analysis is simply a method used to identify potential hazardous conditions associated with a job or task. It breaks down a job or task into steps, identifying potential hazards in each step. In turn, a solution or corrective action is provided to reduce the probability of an injury from that hazard. The analysis must be fully documented and discussed with all employees assigned to a particular job or task before they begin. This assures they are aware of potential hazards.

### **Q: Who performs the Job Hazard Analysis?**

**A:** Managers, supervisors and employees should work together to evaluate the jobs and tasks performed in their work area. The method chosen to do the analysis can vary. For instance, sit down and discuss the job or task, or have the employee perform the job or task while the manager or supervisor records the steps performed, noting the potential hazards observed. In each case, a list is made of all hazards involved and how they can be prevented.

### **Q: Does every job and employee need a Job Hazard Analysis?**

**A:** All jobs and tasks require a job hazard analysis, but many Marshall employees may perform the same jobs or tasks. For example, if your organization performs only office work, then a general analysis

could cover all workers. Be sure to modify the general analysis if any special tasks, such as office supply stocker or mail distributor, are applicable to certain individuals. On the other hand, you may need to perform several analyses if your work involves machines or hand tools. In this case, an analysis would be required for each job or task, such as operating a lathe or drill press.

### **Q: What are the benefits of the Job Hazard Analysis?**

**A:** Benefits include: (1) Identification of misunderstandings or "standard practice" discrepancies that may have evolved and if left in place could make the job less safe. (2) More sets of eyes looking at routine operations to shed a new light on the processes and/or causes of hazards. (3) Common causes can be identified. Corrections for one process might have an effect on the whole directorate. (4) Including workers in the analysis provides the best insight. Controls may have been implemented but not written down. (5) The process for developing the analysis benefits an employee assigned to perform the job or task by providing information that could prevent an accident. (6) The analysis helps supervisors develop employee-specialized training plans where proper training can be a hazard control.

### **Q: How will the Job Hazard Analysis be written?**

**A:** All tasks requiring an analysis will be identified and added to a master list. Organizations sharing a need for an analysis on similar tasks will be asked to provide a person to a team assigned to write that analysis, which then will be used for all

employees performing that task. Job hazard analyses that are accepted for use in an organization will be forwarded to the Safety and Mission Assurance Office to be placed on a Web site for others to use. Analyses for tasks not covered in this manner will be written by the organization needing the analysis with assistance as needed from the Voluntary Protection Plan volunteers. Once the analysis is in place, it will be added to the Web site. Placing these "in use" analyses on the Web might give other organizations insight into job hazard analyses they had not considered, but which might be needed. Samples of completed job hazard analyses will be available for reference.

The following sources are available to assist in completing a job hazard analysis:

- MWI 8715.15, "Job Hazard Analysis."
- Generic templates on Marshall's Voluntary Protection Plan home page at: [http://vpp.msfc.nasa.gov:2000/teams/swat/jha\\_office.pdf](http://vpp.msfc.nasa.gov:2000/teams/swat/jha_office.pdf)

The templates are to be used as a reference or modified by the supervisor to suit the jobs and tasks in their areas.

- The forms to be used when preparing the analysis — 4390 and 4390-1 — are located on Informed Forms. These forms can be filled in and saved electronically.

- The next Job Hazard Analysis training class — 8-11 a.m. for civil servants and 12:30-3:30 p.m. for contractors on March 16 in Bldg. 4203, room 1201 — will instruct supervisors and employees on how to perform an analysis.

For more information, call Linda Myszka at 461-4329, Tommy Powell at 544-0538 or Amy Black at 544-0061.

## Around Marshall

**Avionics Department Open House** — Marshall's Avionics Department will hold an open house from noon-4 p.m. April 20. The open house starts in the main lobby of Bldg. 4487. Portions of the following buildings also will be featured: 4475, 4436 (HSL), 4476, 4619, 4656, 4663 and Antenna Range (by bus only).

**Spot An Environmentalist** — The "Spot-an-Environmental-ist" activity encourages Marshall employees and on-site contractors to do their part in keeping Marshall environmentally friendly. If you observe an employee assisting in keeping Marshall environmentally friendly, please submit the employee's name and a short justification of the environmental deed via e-mail to:

lucy.boger@msfc.nasa.gov

or mail to AD21, Bldg. 4250, room 16B, no later than April 8.

Fifteen nominees will be awarded a gift certificate from "Wild Birds Unlimited" at the Earth Day tree planting ceremony from 10-11 a.m. April 20 on the west side of Bldg. 4493 (Microgravity Development Laboratory).

**Group Fitness Classes** — On-site contractors now may attend any group fitness class offered by the NASA Exchange Fitness Program for only a \$2 fee. Previously, contractors were required to be escorted by a NASA employee. The schedule for classes is: Monday — 5-5:50 p.m., toning, strength training, floor exercises; Tuesday/Thursday — 11:15-11:55 a.m., toning, strength training, floor exercises; and Tuesday/Thursday — 5-5:50 p.m., aerobic conditioning, which includes step, traditional dance and beginning kick-boxing. For more information, call Pat Mirandy at 544-7570 or Mike Clark at 544-3337.

**Fireside Chat** — The Marshall Retirees' Association will host the second in a series of talks recalling Huntsville's role in defense and space at 7 p.m. March 16 at the University of Alabama in Huntsville's Student Union Building. The event is free and open to the public. The March presentation is entitled, "The Army Years: 1950-1960." Joe Moquin, who retired as chief executive officer from Teledyne Brown Engineering, will moderate the panel. Panelists include retired Army Maj. Gen. John Zierdt, who served as a Redstone Arsenal commanding general during this period; Dr. Ernst Stuhlinger, an original von Braun team member; and Jim Kingsbury, who worked as a senior engineer and manager with the team at the U.S. Army and the Marshall Center. The talks are supported by the Marshall Center, the University of Alabama in Huntsville and the U.S. Army.

**Farewell reception** — The Space Transportation Directorate will host a farewell reception from 2-4 p.m. March 13 in the Bldg. 4203 cafeteria. Honorees include: Wendell Rylant, Doug Stanfield, William Walker, Lynn Chou, Jan Monk, Sharon Carswell, Bill Millwood, Harold Scofield, Susan Hudson, Bob Gaffin, Joni Cornelison, Hilda Davis, Benjamin Shackelford, Jim Crawford, Melanie Ramsey, Don Thoms, Bill Eoff, Glenn Eudy, and Ken Hinkle. Tickets, at \$5 each, are available from Rita Brazier at 544-3295, Gabrall Yeldell at 544-6501, Polly Thompson at 544-1170, or Philisha Matthews at 544-6997.

## 1999-00 Final Basketball Standings/Seeds

### DIVISION 1

1. CST	13-1
2. Magic	10-4
3. Net Prophets	9-5
4. Windex	9-5
5. Foul Ball	8-6
6. Nothing But Net	5-9
7. LB&B	1-13
8. Zone	1-13

**Net Prophets & Windex split, however, Net Prophets get No. 3 seed due to better record vs top two teams.**

**LB&B & Zone split, LB&B won coin toss for 7<sup>th</sup> seed.**

### DIVISION 2

1. B52s	12-0, 4-0
2. Run'n'Gun	8-4, 4-0
3. Tin Men	5-7, 4-0
4. Alliance	3-8, 4-0
5. Bombers	1-10, 1-3

### DIVISION 3

1. Rockets	10-1, 1-4
2. Kitchen Sinks	7-4, 1-4
3. Orbiters	7-4, 1-4
4. Swish	5-6, 0-5
5. Boeing Bombers	11-5
6. King & His Men	9-7
7. Toxic Shooters	7-9
8. Jello Shooters	4-12
9. Barbarians	2-14

**Kitchen Sinks & Orbiters split and had same record vs top team; Sinks won coin toss.**

## Job Opportunities

**Reassignment Bulletin 00-17-CP, AST, Technical Management, GS-801-13**, Office of the Director. Closes March 14.  
**CPP-00-40-CL, AST, Aerospace Flight Systems, GS-861-14**, Flight Projects Directorate, Flight Systems Dept., Nodes 2/3 Program Group. Closes March 14.  
**CPP-00-41-CL, Supervisory, AST, Aerospace Flight Systems, GS-861-15**, Flight Projects Directorate, Flight Systems Dept., ECLSS Group. Closes March 14.  
**CPP 00-42-CL, AST, Flight Activity Planning, GS-801-14**, Flight Projects Directorate, Payload Operations & Integration Dept., Operations Development Group. Closes March 15.  
**CPP-00-38-CL, Supervisory, AST, Technical Management, GS-801-15**, Engineering Directorate, Engineering Systems, Dept., Configuration & Data Management Group. Closes March 15.

## Obituary

**Thompson, James F., 62**, of Huntsville, died Feb. 11. He retired from Marshall in 1999 where he worked as an aerospace engineer in the Program Development Directorate. He is survived by his wife, Jacqueline S. Thompson.



## Employee Ads

## Miscellaneous

- ★ Bristol race tickets. One pair for both races (Spring). 830-1403
- ★ Electric clothes dryer, \$100; 3/4" pipe clamps, \$7.50 each. 355-8808
- ★ Dog kennel, 4'x4'x4', and large Igloo dog house, \$150. 498-3229/cell phone 658-2705
- ★ Casio keyboard, \$85. 533-5942
- ★ Piano, spinet, Story & Clark, maple finish, w/ bench, \$700. 883-2757
- ★ Aquarium, 55-gallon w/black lacquer stand and accessories, \$250. 771-2911 after 5 p.m.
- ★ Microwave, \$75; Men's suits, 38R; cameras, Canon/Olympus, \$35 ea.; brass trunks, \$5 & \$10. 776-9165
- ★ Oscilloscope, handheld, Vellman model HHS5, rechargeable, w/hard case and AC adapter, \$225 firm. 430-0400/Chris
- ★ Steel door for house crawl space, 31 3/4"x 34 1/4", \$15. 895-9520/Philip
- ★ Hitachi oscilloscope, V-650F-60MHZ, \$70; Tektronix 2213 60MHZ oscilloscope w/mobile stand, \$150; Manual, BK1500 oscilloscope, \$10. 851-8251
- ★ Baby stroller, Graco, deluxe model, \$50. 539-8841
- ★ Two aquariums, 55-gallon, one fully loaded w/ iron stand; rocks, sponge ready for salt water tank. 858-8074
- ★ Schwinn road bicycle, 12-speed, 26", men's, \$40. 881-4028
- ★ Magazines, 30-round for Ruger 10/22, two each, both for \$45. 379-3606
- ★ Monkey grass, (Liriope), solid green, \$1 per plant. 539-8976
- ★ Stainless steel cable, 18", 250 feet, \$110. 931-433-5108/E-mail jdharper@vallnet.com
- ★ Table-tennis table, \$50 obo. 536-9083/6 to 8 p.m.
- ★ Ford tractor, 3600, 42HP, power steering and lift, w/6' Bush-hog and blade, \$6,800. 881-4247
- ★ Aquarium, 55-gallon, solid wood aquarium stand w/two doors, \$40. 721-7377
- ★ Brother 4500ML multi-function center, laser printer, scanner, copier, fax/telephone, 1996, \$300. 882-2369
- ★ 1990 Mastercraft TriStar 190 w/trailer, open bow, 351 engine, custom cover & barefoot boom, \$13,900 negotiable. 757-0320
- ★ Brass trunks, \$5/\$10; lamp (blue, \$10; curtains (floral), 84" w/valances, \$50; microwave, \$75. 776-9165

- ★ Computer cabling, 2,000 feet, RG-62, various lengths, BNC termination; several boxes of other cabling; \$35. 883-8947

## Vehicles

- ★ 1993 Acura Legend, leather, sunroof, cashmere color, \$12,500. 880-8008/797-6173
- ★ 1996 Mazda 626 LX, V-6, 60K miles, white, sunroof, 5-speed, 22-27 MPG, \$10,250. 574-5098
- ★ 1996 Acura SLX, 52K miles, moonroof, CD changer, remote entry, \$20,000. 539-4508
- ★ 1996 Honda Civic, silver, 59K miles, 5-speed, a/c, updated Pioneer stereo, \$11,000. 882-5363
- ★ 1995 Buick LeSabre Limited, beige metallic, 63K miles, \$12,400. 539-3858
- ★ 1996 Mazda MPV, burgundy, 30K miles, AM/FM cassette, power windows/locks. 882-7054
- ★ 1999 Toyota Sienna van, 9K miles, \$23,900. 722-8221
- ★ 1999 Subaru Forester, leather, AWD, 3K miles, \$21,700. 881-0755
- ★ 1996 Honda Odyssey EX, 83K miles, \$15,500. 536-8652
- ★ 1995 Monte Carlo Z34, red, V-6, 86K miles, \$9,800. 747-8884/cell 339-1418
- ★ 1990 Dodge Caravan, 90K miles, V-6, 3.3L engine, auto, \$3,975. 534-6166

## Wanted

- ★ Used piano, good condition. 881-0883

## Found

- ★ Small change purse. Call 544-7686 to identify
- ★ Striped sweater in Lobby, Bldg. 4200. Call 544-4758 to identify

## Lost

- ★ Government ID card, Bldg. 4708 area. Call 544-9283 if found
- ★ Car keys for Ford Tempo near Bldg. 4203. Call 544-4439 if found

## Center Announcements

- ☛ **MOO Meets** — The Management Operations Office (MOO) retirees will meet for breakfast/lunch at 10 a.m. on March 23 at the Cracker Barrel Restaurant in Madison. For more information, call 539-0042.
- ☛ **Government Accountants Meet** — The North

Alabama Chapter of the Association of Government Accountants will meet at 11 a.m. on March 16 at Landry's Restaurant on Bob Wallace. Cost is \$11 per person. For reservations, call Sandy Seymour at 544-0099.

- ☛ **Facilities Office Breakfast** — The Facilities Office employees, retirees and friends will meet for breakfast at 8 a.m. on March 14 at Shoney's on University Drive. For more information, call Carl Gates at 232-2695.

- ☛ **MESA Meets** — Marshall Engineers and Scientists Association (MESA) will meet at 11:30 a.m. March 23 in Bldg. 4471, room C-105. Refreshments will be served.

- ☛ **Easter Egg Hunt Volunteers** — Volunteers are needed to help with the annual Easter Egg Hunt sponsored by the NASA Exchange. The hunt will be held at 2 p.m. April 9 at the Marshall Picnic Area. The rain date will be 2 p.m. April 16. To volunteer, call Gena Marsh at 544-0128 or Donna Mahieux at 544-7511.

- ☛ **MARS Tennis Club** — The MARS Tennis Club is holding a membership drive and league sign-up through March 20. Membership includes use of Marshall Center lighted tennis courts, participation in tournaments and club activities, and eligibility for singles and doubles leagues. NASA employees, retirees, on-site contractors and their family members are eligible. For more information or to receive a membership package, call Larry Craig at 544-7183, or send e-mail to Larry.Craig@msfc.nasa.gov

- ☛ **MARS Fishing Club** — Results of the bass tournament held March 4 are: first place — Charlie Cothran and Ross Evans, 9.23 pounds; second place — John Pea and Joe Thomas, 5.98 pounds; third place — John Harbison and Paul Brock, 5.70 pounds; and big fish — John Pea, 3.75 pounds. The next tournament will be held on Wilson Lake March 25. For information, call Ross Evans 961-2305, Don McQueen 544-9073 or Charlie Nola 544-6367.

- ☛ **MARS Ballroom Dance Club** — West coast swing lessons will be offered at 7 p.m. March 13, 20 and 27 in the Parish Hall of St. Stephen's Episcopal Church at 8020 Whitesburg Drive. The lessons will be taught by Bonnie Henley and will cost \$6 per person per night. For more information, call Linda Kinney at 544-0563.

- ☛ **NARFE Meets** — The National Association of Retired Federal Employees (NARFE) will meet at 9:30 a.m. March 11 at the Senior Center on Drake Avenue. Martin Barinata of the Redstone Federal Credit Union will address financial counseling, planning and investments for seniors. For more information, call 837-0382 or 881-3168.

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